

(For JSPS Fellow)

Form B-5

Date (日付)

18 / 10 / 2016 (Date/Month/Year: 日/月/年)

**Activity Report -Science Dialogue Program-**  
(サイエンス・ダイアログ事業 実施報告書)

- Fellow's name (講師氏名): Maria Vanessa BALOIS (ID No. P16066)

- Participating school (学校名): Tochigi Prefectural Utsunomiya Girl's High School

- Date (実施日時): 17 / 10 / 2016 (Date/Month/Year: 日/月/年)

- Lecture title (講演題目): (in English) Exploring the invisible with light: Welcome to the world of the micro and the nano!

(in Japanese)

- Lecture summary (講演概要): Please summary your lecture 200-500 words.

My lecture was divided into three parts: 1) self-introduction, 2) my research, and 3) why did I choose to be a scientist. I made the lecture as dynamic as possible by asking questions during the lecture and randomly choosing students to answer.

For my self-introduction, I began by introducing my country – the Philippines – and highlighted the beautiful places the students can visit if they get the chance to visit. Afterwards, I spoke about my unique educational background. I attended Philippine Science High School, a science high school similar to Tochigi Prefectural Utsunomiya Girl's High School, and studied at the University of the Philippines to obtain my BS Physics degree. Upon graduating, I felt that many exciting scientific work was happening abroad and that I loved working with lasers. So I decided to move to the U.S.A. for graduate school and got my MS Optics degree from the University of Rochester in Rochester, New York. Yearning to specialize in another field, I left the U.S. and came to Japan to earn my PhD degree in Electronic Chemistry from Tokyo Institute of Technology. I emphasized to the students that communication is very important especially when you are working abroad and interacting with different kinds of people. This is why, I explained, you must learn English so you can share you ideas.

For my research, I gave a general introduction of how I study the physical and chemical properties of nano-sized materials using a technique called Raman spectroscopy. I introduced the equipment I use in my spectroscopy experiments and the concept of Raman scattering. Since I study both micro and nano-sized materials, I also explained the techniques I employ to study these materials, which are micro-Raman spectroscopy and tip-enhanced Raman scattering (TERS). At the end of the second part of my lecture, I asked for three volunteers and conducted three different experiments. The first experiment was turning an ordinary cellphone into a portable microscope by attaching a lens from an LED light that can be bought in any

hardware store. The second experiment was how to make thin layers of graphene by employing the scotch tape method. The third experiment was asking a student to pick up a cantilever tip using a pincette – sounds simple but requires practice.

The last part of my lecture was spent talking about why I chose to become a scientist. I gave three keywords: inspiration, freedom, and ambition. **Inspiration:** By watching science fiction movies and interacting with brilliant scientists in the course of my life, I was inspired to become scientist. When I encounter something new, I always ask myself "What is happening?", "Why is it happening?" and "How is it happening?". **Freedom:** Knowing about scientific freedom and being able to design and conduct my own experiments, I can learn more about our world. My experiments, however, are a mixture of success and failure, but that does not discourage me because I always learn something from these experiences, which eventually help me succeed. **Ambition:** Striving to be the best and contributing something that can make the world a better place has kept me moving forward as a scientist. Without this ambition and my personal dreams, I think I will not be who I am today. With that I ended my lecture.

- Language used (使用言語): English

- Lecture format (講演形式):

◆Lecture time (講演時間) 60 min (分), Q&A time (質疑応答時間) 5 min (分)

◆Lecture style (ex.: used projector, conducted experiments)

(講演方法 (例: プロジェクター使用による講演、実験・実習の有無など))

used projector and conducted experiments

◆Interpretation (ex.: assistance by accompanied person, provided Japanese explanation by yourself) (通訳 (例: 同行者によるサポート、講師本人による日本語説明))

No accompanied person

◆Name and title of accompanied person (同行者 職・氏名)

N/A

◆Other note worthy information (その他特筆すべき事項):

School staff were very kind.

- Impressions and opinions from accompanied person (同行者の方から、本事業に対する意見・感想等がありましたら、お願いいたします。):